

provide a meaningful technique platform for cardiovascular regeneration research in future.

#### GW25-e0248

##### Electrical and histological remodeling in a rabbit model of atrial fibrillation induced by atrial ischemia and rapid atrial pacing

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**Objectives:** we established a rabbit model of AF induced by atrial ischemia combined with rapid atrial pacing (RAP) to evaluate the relative contributions of electrical and histological remodeling to the inducibility and maintenance of AF.

**Methods:** Twenty-four rabbits were randomly divided into an atrial ischemia combined with RAP group (Group I, n=8), RAP group (Group P, n=8) and an equal control group (Group C, n=8). An electrode sutured onto the left atrial appendage provided stimulation and recordings. Group I underwent RAP (1,000 beats/minute) following successful ligation of the atrial branch of the right coronary artery. Group C did the pseudosurgery without pacing, Group P underwent RAP (1,000 beats/minute). Electrical and histological parameters were tested at three intervals: 1 hour, 1 week and 3 weeks.

**Results:** The rabbits in group I showed a higher rate of AF induction, shortening of the atrial effective refractory period (AERP), loss of the normal rate adaptation and intra-atrial conduction delay (IACD), and prolongation of the P-wave interval. With prolonged ischemia and RAP, the IACD and persistence of AF increased. Shortening of the AERP and loss of the normal rate adaptation appeared at 1 hour and reached its maximum after 1 week. After 3 weeks, pathological examination of group I animals showed myocardial ischemia, edema, focal necrosis, and fibrosis, more evident in the right atrium. Group C showed no pathological changes.

**Conclusions:** Atrial ischemia combined with RAP resulted in evident electrical and histological remodeling of the atrium, which effectively promoted the inducibility and maintenance of AF.

#### GW25-e4213

##### Acute and chronic effects of cilostazol on transient outward potassium current in isolated rat right ventricular myocytes

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**Objectives:** To explore the effects of cilostazol on transient outward potassium current ( $I_{to}$ ) in isolated rat right ventricular myocytes.

**Methods:**  $I_{to}$  in myocytes enzymatically isolated from male SD rat right ventricle was recorded by using whole-cell patch clamp technique. The experiment consisted of two parts: perfusion experiment: Current density of  $I_{to}$  was recorded before and after perfusion with cilostazol at 1  $\mu$ mol/L, 2  $\mu$ mol/L, 5  $\mu$ mol/L or 50  $\mu$ mol/L; oral medication experiment: 20 male SD rats were randomized into control group and experimental group. The rats in experimental group were fed with 10mg/kg/d cilostazol by oral administration for 4 weeks. The rats in control group had free access to food. Then current density of  $I_{to}$  was compared between the two groups.

**Results:** In acute perfusion experiment, current densities of  $I_{to}$  were significantly decreased in all groups. The peak amplitude of  $I_{to}$  decreased from (20.82 $\pm$ 7.42) pA/pF to (7.48 $\pm$ 2.56) pA/pF (n=9, P=0.00), (18.64 $\pm$ 7.89) pA/pF to (7.63 $\pm$ 1.78) pA/pF (n=5, P=0.02), (18.87 $\pm$ 5.05) pA/pF to (7.19 $\pm$ 1.79) pA/pF (n=3, P=0.03), and (21.45 $\pm$ 2.54) pA/pF to (6.96 $\pm$ 2.31) pA/pF (n=7, P=0.00), respectively. In addition, no significant differences were observed among the four groups with current density of  $I_{to}$  in every group decreasing by 60%. In chronic oral medication experiment, no difference existed in the peak amplitude of  $I_{to}$  between control group and experimental group (n=5; (20.23 $\pm$ 5.64) pA/pF vs (21.74 $\pm$ 8.56) pA/pF; P>0.05).

**Conclusions:** Perfusion of cilostazol, rather than oral cilostazol, inhibits  $I_{to}$  in isolated rat right ventricular myocytes.

#### GW25-e4458

##### Effects of Ginsenoside Rb1 on vascular restenosis, SOD and MDA in rabbits with iliac artery injury

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**Objectives:** To investigate the effect of Ginsenoside Rb1 in protecting vascular intima and on superoxide dismutase (SOD) and malondialdehyde (MDA) in rabbits iliac with iliac artery injury.

**Methods:** 24 male New Zealand albino rabbits were equally randomized into control group, model group and drug group. Rabbits of control group were fed with common forage, but model group and drug group fed with high fat diet (1.0% cholesterol, 10% lard). Two weeks later, the iliac arteries were injured by balloon for model group and drug group. Rabbits were killed four weeks after operation. The vascular structure was

observed by scanning electron microscope, and the SOD activity and MDA level was assayed.

**Results:** Scanning electron microscope showed that endothelial cells lined up in order in iliac artery of control group, but the endothelial cells desquamated and smooth muscle cell beneath endothelium was exposed in that of model group. While endothelial cells lined up in order in that of drug group. The serum SOD activity was higher in the control group than in the model and drug groups, but drug group had higher serum SOD activity than the model group. The serum MDA level was lower in the control group than in the other two groups, but drug group had lower MDA level than the model group.

**Conclusions:** Ginsenoside Rb1 can accelerate repair of vascular intimal in injured rabbit iliac artery, possibly in relation to increased SOD activity and decreased lipid peroxidation.

#### GW25-e4467

##### Effects of Tongxinluo on vascular stenosis and TGF- $\beta$ 1 after balloon injury of rabbit iliac artery

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**Objectives:** To investigate the effects of Tongxinluo on vascular stenosis and transforming growth factor- $\beta$ 1 (TGF- $\beta$ 1) after iliac artery were injured by balloon in diet-induced atherosclerotic rabbits.

**Methods:** 24 male New Zealand albino rabbits were equally randomized into control group, model group and drug group. The iliac arteries of the rabbits in the latter two groups were subjected to balloon injury. Four weeks later, serum TGF- $\beta$ 1 level was assayed, Endothelial hyperplasia, eNOS Protein and mRNA expression were observed in injured iliac artery.

**Results:** Optical microscope revealed narrowed vascular lumen, thicken intima and numerous arteriosclerotic plaques in the model group compared with the control group, whereas the vascular lumen and intima thickness remained basically normal in drug group. The serum TGF- $\beta$ 1 level was lower in drug group than that of model group. Immunohistochemistry and RT-PCR results showed that TGF- $\beta$ 1 protein and mRNA expression was lower in rabbit iliac artery of drug group than that in model group.

**Conclusions:** Tongxinluo can lessen intimal hyperplasia and vascular stenosis in iliac artery injury rabbits, and the mechanism of which may be related to decrease in TGF- $\beta$ 1 protein and gene expression.

#### GW25-e5259

##### Effect of different intensity training on in situ myocardial mitochondrial function in rats

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**Objectives:** To investigate the influence of different intensity of exercise on myocardial mitochondrial respiration function in SD rat, which include fatty acid and carbohydrate substrate metabolism pathways.

**Methods:** 24 SD rats were randomly divided into 3 groups, control group (C trial), moderate exercise group (M trial) and high intensity exercise group (H trial). M and H groups undertook treadmill exercise. M group run at the speed of 9 mile per minute, equally 18%  $VO_{2max}$ , and H trial run at 18 miles per minute, equally 50%  $VO_{2max}$ . Every trial exercised for 4 weeks. After the last time training, rats were anesthetized, and the hearts were removed. 5mg wet weight tissue were dissected into fiber bundles in BIOPS at 0°C for 30 minutes, and then transferred into a tube containing BIOPS and 50  $\mu$ g mL<sup>-1</sup> saponin to be permeabilized, which cost about 20 minutes. Then transferred the prepared fibers into the wells of High Resolution Respiration Instrument (Oroboros, Austria). The equilibrated O<sub>2</sub> concentration in the wells were 480 nmol/mL. Titrations were implemented as Protocol: Palmitoyl carnitine (PAL) + ADP+Cytochrome C + Malate (MAL) + Octanoyl carnitine (OCT) + Glutamate (GLU) + MAL + Rotonone (ROT) + Succinate (SUC) + Antimycin A (ANT) + Ascorbate (ASC) /TMPD. Finally the function of several mitochondrial respiratory chain complexes and the RCR of fatty acid substrates were assessed using the OROBOROS Oxygraph-2k high-resolution respirometry instrument.

**Results:** The RCR of fatty acid substrate PAL and OCT in the H trial was significantly greater than the C trial (P<0.01), but significantly smaller than the M trial (P<0.05). When substrates from carbohydrate metabolism were titrated as the protocol GLU+MAL+Rotonone (ROT) +Succinate (SUC) +Antimycin A (ANT) +Ascorbate (ASC) /TMPD, the respiration function of Complex I+II and Complex II and Complex IV from M trial were significantly greater than C trial (P<0.01), but smaller than H trial (P<0.05).

**Conclusions:** This study demonstrated in rats an increase in myocardial mitochondrial oxidation function of exogenous glucose and fatty acid during moderate and high intensity exercise. A greater reliance on fat source occurred moderate exercise and a greater reliance on carbohydrate source during high intensity exercise in myocardial mitochondrial oxidation.